

GOLF CLUB AND CLUB HEAD

FIELD OF THE INVENTION

The present invention relates to an improved golf club head for use in golf clubs, and more particularly for use in chippers and wedges.

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BACKGROUND OF THE INVENTION

Historically, golfers have found it difficult to accurately propel a ball onto the fairway or green from the rough, that grass typically located adjacent to the fairway or green and characterized by a longer length of grass. This difficulty occurs because of the tendency of the club head to turn or twist when it makes contact with the rough, whether it be high grass or shorter, wirery grass. Such twisting or turning of the club head prohibits the striking face of the club head from making solid contact with the golf ball, often leading to inconsistent and undesired results.

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Typically, the club heads used for advancing golf balls from the rough to the fairway or green, such as pitching wedges or chippers, have blunt, dull or rounded leading edges with relatively large sole-to-striking face angles. These designs often succumb to the problem of club head twisting or turning when contact is made with the rough. This problem can be alleviated by a design that allows the club head to cut through the grass behind the golf ball.

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While some club heads have been designed with sharp leading edges, the design of these club heads is impractical for cutting through high grass. For example, Clements (U.S. Pat. No. 3,003,768) shows a club head with a short lip at the leading edge. This

club head, as revealed in the patent, was designed for the purpose of advancing a ball from sand or water. The purpose and design of the sharp edge in Clements is to assist in striking the ball by scooping an obstruction such a water or sand into a slot designed to funnel the obstruction through to the rear side of the club head. Clements does not reveal a true knife-like edge with a small sole-to-striking face angle to facilitate cutting through rough. In addition, the width of the sole resulting from the angle between the scooping face and the sole inhibits a grass cutting action.

Likewise, British Patent No. 1,078,412 shows a cutting edge as part of the hosel of a golf club head. This edge does not form a part of the blade of the golf club head. The edge, therefore, does not foster a cutting action by the striking face as it proceeds through troublesome rough.

The current designs for club heads used in advancing balls from the rough reveal the need for an improved club head that will provide controlled golf shots from the rough.

SUMMARY OF THE INVENTION

As herein described, the present invention provides for a golf club head that includes a hosel and a metal blade. The metal blade includes a knife-like leading edge at the juncture of a sole and a striking face, a sole with a rounded protrusion, and a rear face that extends from the sole's protrusion to a trailing edge of the striking face.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a front elevation view of a golf club head in accordance with the invention.

FIGURE 2 is a cross section view of the golf club head of Figure 1 taken along the section line 2-2 of Figure 1.

5 FIGURE 3 is a cross section view of one embodiment of the golf club head in accordance with the invention..

FIGURE 4 is a rear elevation view of one embodiment of the golf club head in accordance with the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to Figures 1 and 2, a golf club head is designated generally at 10, in accordance with a preferred embodiment of the present invention. The end of the club head where the hosel 14 is located is referred to as the heel end. The end of the club head opposite the heel end is referred to as the toe end. The leading end of the club head is generally the downward most portion of the club head. The trailing end of the club is generally the upward most portion of the club head.

15 The golf club head includes a hosel 14 and a metal blade 16 and may be attached to a shaft 12 (shown broken to reduce the size of the figure). The shaft 12 may have a handle portion at one end (not shown) and be fitted to the hosel 14. The hosel 14 connects the metal blade 16 to the shaft 12.

20 The metal blade 16 comprises a striking face 18, a sole 20 and a rear face 22. The striking face 18 meets the sole 20 at a knife-like leading edge 24. The striking face 18

is planar and meets the rear face 22 at a trailing edge 26. The rear face may extend in an arc 28 from the trailing edge 26 and then become planar and substantially parallel to the striking face 18. The rear face 22 meets the sole 20 at a rounded protrusion 30 that runs substantially parallel to the knife-like leading edge 24 along the surface of the golf club head opposite the striking face 18. Beginning at the leading end of the protrusion, the sole 20 is planar, ultimately meeting the striking face 18 at the knife-like leading edge 24.

The metal blade 16 is comprised of a durable metal that can maintain a hardened edge, for example a hardened steel. A durable metal will better allow the knife-like leading edge 24 to maintain its cutting edge through repeated uses.

In a preferred embodiment, the metal blade 16 has disposed within it at least one metal dowel 32 that is located substantially forward of and substantially parallel to the rounded protrusion 30 of the sole 20. Alternatively, the metal blade 18 may include two metal dowels 32 disposed in the metal blade 18 and located substantially on each side of the apex of rounded protrusion 30 of the sole 20 and substantially parallel to such protrusion 30, with the leading dowel 32B disposed toward the knife-like leading edge 24 and the trailing dowel 32C disposed toward the trailing edge 26. In addition, it is preferred that the metal dowels 32 are cylindrical, with the leading dowel 32B being smaller in diameter than the trailing dowel 32C. The preferred diameter of the leading dowel 32B is 0.25 inch or less and the preferred diameter of the trailing dowel 32C is between 0.375 inch and 0.4375 inch. Additionally, each metal dowel 32 is embedded approximately 0.25 inch from the center of the edge of the toe end of the club head 10

and 0.25 inch from edge of the metal blade 16 that is attached to the hosel 14 of the golf club head 10. The metal dowels 32 may be made from a metal having a density greater than that of the metal from which the rest of the club head is formed. For example, the metal dowels 32 could be made from lead, tungsten or steel. The inclusion, location and density of these metal dowels 32 promote a desired swing pendulum action.

In a preferred embodiment of the invention, the angle **a** between the striking face 18 and the sole 20 is between 20° and 30°. This narrow angle **a**, in combination with the knife-like leading edge 24, permits the club head 10 to cut through the rough, thereby allowing the striking face 18 to make more solid and accurate contact with the golf ball.

The knife-like leading edge 24 may resemble various knife shapes, such as a straight edge or a serrated edge. An example of a serrated embodiment is depicted in Figure 4. In such a serrated embodiment, a distance between the troughs 34 of the serration is between approximately 0.1875 inch and 0.250 inch. This serration can help improve the effectiveness of the knife-like leading edge 24 as it cuts through the rough.

In a preferred embodiment, the striking angle **b** between the striking face 18 and a vertical plane 100 in which the shaft 12 and hosel 14 of the golf club are positioned when they are in a substantially upright address position is between 45° and 60°, where the vertical plane 100 is perpendicular to the ground level horizontal plane 110 and parallel to the leading edge 24 of the club head 10. A higher angle **b** promotes a higher but shorter shot. A smaller angle **b** allows for a longer shot but provides for a lower ball flight trajectory as is well known in the golf industry.

In one preferred embodiment, the thickness of the metal blade 16 between the

striking face 18 and the planar portion of the rear face 22 is between 0.8125 inch and 0.875 inch. In addition, the length of the club head 10 from the knife-like leading edge 24 to the trailing edge 26 at the line 38 where grooves on the striking face terminate on the toe end of the club is between 2.375 and 2.5 inches. Also, the distance from the intersection of the hosel 14 meets the metal blade 16 to the toe end is between 4.00 inches to 4.75 inches.

The angle c between the ground level 110 and the apex or downward most point of the rounded protrusion 30 of the sole 20 is approximately 10° when the shaft 12 and hosel 14 of the golf club are in a substantially upward address position in the vertical plane 100 perpendicular to the ground level horizontal plane 110 and parallel to the leading edge 24 of the club head. This protrusion 30 helps prohibit the knife-like leading edge 24 from cutting too deeply into the ground by providing a bounce mechanism as the club head 10 proceeds downward. As the angle b between the striking face 18 and the above described vertical plane decreases and the striking face 18 becomes more upright, the distance between the apex of the rounded protrusion 30 of the sole 20 and the striking face 18 will necessarily increase to maintain the angle c.

Another embodiment of the golf club head is illustrated in Figure 3. In this embodiment, the rear face 22A gradually curves after the arc 28A to meet the protrusion 30A of the sole 20A. Further, in this embodiment, the protrusion 30A also gradually curves to form into the planar region of sole 20A. Like other embodiments, angles a, b, and c are maintained as described above to insure the leading edge's 24 effectiveness and help prevent the leading edge 24 from digging too far into the ground during its

downward progression.

An abrasive coating can also serve as the striking face 18 in one embodiment of the invention. Such a coating may improve spin on a golf ball struck by the club head 10 by facilitating better contact between the club head 10 and the golf ball. Spin is a very desirable result for most wedge shots. Thus, a golfer may enjoy the added benefit of increased spin along with the advantages of the invention already described. This abrasive coating may be formed, for example, by embedding particles of a material such as diamond into the striking face of the club head.

Although the invention has been described in terms of exemplary embodiments, it is not limited thereto. Rather, the appended claims should be construed broadly to include other variants and embodiments of the invention that may be made by those skilled in the art without departing from the scope and range of equivalents of the invention.